

THE ASTROPHYSICAL JOURNAL
CONTENTS OF VOLUME 648, PART 1

2006 SEPTEMBER 1, NUMBER 1

	Page
COSMIC REIONIZATION REDUX <i>Nickolay Y. Gnedin & Xiaohu Fan</i>	1
THE END OF THE REIONIZATION EPOCH PROBED BY $\text{Ly}\alpha$ EMITTERS AT $z = 6.5$ IN THE SUBARU DEEP FIELD © <i>Nobunari Kashikawa, Kazuhiro Shimasaku, Matthew A. Malkan, Mamoru Doi, Yuichi Matsuda, Masami Ouchi, Yoshiaki Taniguchi, Chun Ly, Tohru Nagao, Masanori Iye, Kentaro Motohara, Takashi Murayama, Kouji Murozono, Kyoji Nariai, Kouji Ohta, Sadanori Okamura, Toshiyuki Sasaki, Yasuhiro Shioya, & Masayuki Umemura</i>	7
LOCAL VOIDS AS THE ORIGIN OF LARGE-ANGLE COSMIC MICROWAVE BACKGROUND ANOMALIES. I. <i>Kaiki Taro Inoue & Joseph Silk</i>	23
POPULATION III STAR FORMATION IN A Λ WDM UNIVERSE <i>Brian W. O'Shea & Michael L. Norman</i>	31
DETECTION AND FUNDAMENTAL APPLICATIONS OF INDIVIDUAL FIRST GALAXIES © <i>Renyue Cen</i>	47
SYSTEMATIC SURVEY OF EXTENDED $\text{Ly}\alpha$ SOURCES OVER $z \sim 3-5$ <i>Tomoki Saito, Kazuhiro Shimasaku, Sadanori Okamura, Masami Ouchi, Masayuki Akiyama, & Michitoshi Yoshida</i>	54
A STRONG X-RAY FLUX RATIO ANOMALY IN THE QUADRUPLY LENSED QUASAR PG 1115+080 © <i>David Pooley, Jeffrey A. Blackburne, Saul Rappaport, Paul L. Schechter, & Wen-fai Fong</i>	67
THE EXTRAGALACTIC LENS VLBI IMAGING SURVEY (ELVIS). I. A SEARCH FOR THE CENTRAL IMAGE IN THE GRAVITATIONAL LENS PMN J1838-3427 <i>Edward R. Boyce, Joshua N. Winn, Jacqueline N. Hewitt, & Steven T. Myers</i>	73
SPITZER OBSERVATIONS OF $z \sim 3$ LYMAN BREAK GALAXIES: STELLAR MASSES AND MID-INFRARED PROPERTIES <i>D. Rigopoulou, J.-S. Huang, C. Papovich, M. L. N. Ashby, P. Barmby, C. Shu, K. Bundy, E. Egami, G. Magdis, H. Smith, S. P. Willner, G. Wilson, & G. G. Fazio</i>	81
DISSECTING THE CIRCUMSTELLAR ENVIRONMENT OF γ -RAY BURST PROGENITORS © <i>Jason X. Prochaska, Hsiao-Wen Chen, & Joshua S. Bloom</i>	95
PENETRATING THE DEEP COVER OF COMPTON-THICK ACTIVE GALACTIC NUCLEI <i>N. A. Levenson, T. M. Heckman, J. H. Krolik, K. A. Weaver, & P. T. Życki</i>	111
BLACK HOLE MASSES AND EDDINGTON RATIOS AT $0.3 < z < 4$ <i>Juna A. Kollmeier, Christopher A. Onken, Christopher S. Kochanek, Andrew Gould, David H. Weinberg, Matthias Dietrich, Richard Cool, Arjun Dey, Daniel J. Eisenstein, Buell T. Jannuzi, Emeric Le Floch, & Daniel Stern</i>	128
SIX PEAKS VISIBLE IN THE REDSHIFT DISTRIBUTION OF 46,400 SDSS QUASARS AGREE WITH THE PREFERRED REDSHIFTS PREDICTED BY THE DECREASING INTRINSIC REDSHIFT MODEL <i>M. B. Bell & D. McDiarmid</i>	140
THE KINEMATIC AND SPECTRAL AGES OF THE COMPACT RADIO SOURCE CTD 93 <i>Hiroshi Nagai, Makoto Inoue, Keiichi Asada, Seiji Kamenoi, & Akihiro Doi</i>	148
EVOLUTIONARY IMPLICATIONS FROM SDSS J085338.27+033246.1: A SPECTACULAR NARROW-LINE SEYFERT 1 GALAXY WITH YOUNG POSTSTARBURST © <i>J. Wang & J. Y. Wei</i>	158
THE STARBURST IN THE ABELL 1835 CLUSTER CENTRAL GALAXY: A CASE STUDY OF GALAXY FORMATION REGULATED BY AN OUTBURST FROM A SUPERMASSIVE BLACK HOLE <i>B. R. McNamara, D. A. Rafferty, L. Birzan, J. Steiner, M. W. Wise, P. E. J. Nulsen, C. L. Carilli, R. Ryan, & M. Sharma</i>	164
THE SUNYAEV-ZEL'DOVICH EFFECT IN A SAMPLE OF 31 CLUSTERS: A COMPARISON BETWEEN THE X-RAY PREDICTED AND <i>WMAP</i> OBSERVED COSMIC MICROWAVE BACKGROUND TEMPERATURE DECREMENT <i>Richard Lieu, Jonathan P. D. Mittaz, & Shuang-Nan Zhang</i>	176
THE PARTICLE CONTENT OF EXTRAGALACTIC JETS <i>David S. De Young</i>	200

X-RAY GALAXY CLUSTERS IN NoSOCS: SUBSTRUCTURE AND THE CORRELATION OF OPTICAL AND X-RAY PROPERTIES ②	209
<i>P. A. A. Lopes, R. R. de Carvalho, H. V. Capelato, R. R. Gal, S. G. Djorgovski, R. J. Brunner, S. C. Odewahn, & A. A. Mahabal</i>	
ON IRON ENRICHMENT, STAR FORMATION, AND TYPE Ia SUPERNOVAE IN GALAXY CLUSTERS	230
<i>Michael Loewenstein</i>	
THE BRIGHT AGES SURVEY. II. EVOLUTION OF LUMINOSITY, DUST EXTINCTION, AND STAR FORMATION FROM $z = 0.5$ TO $z = 2.5$ ②	250
<i>James W. Colbert, Matthew A. Malkan, & R. Michael Rich</i>	
GALAXIES IN SDSS AND DEEP2: A QUIET LIFE ON THE BLUE SEQUENCE? ②	268
<i>Michael R. Blanton</i>	
ON THE ORIGIN OF [O II] EMISSION IN RED-SEQUENCE AND POSTSTARBURST GALAXIES	281
<i>Renbin Yan, Jeffrey A. Newman, S. M. Faber, Nicholas Konidaris, David Koo, & Marc Davis</i>	
KECK DEEP FIELDS. III. LUMINOSITY-DEPENDENT EVOLUTION OF THE ULTRAVIOLET LUMINOSITY AND STAR FORMATION RATE DENSITIES AT $z \sim 4, 3$, AND 2	299
<i>Marcin Sawicki & David Thompson</i>	
FAR-ULTRAVIOLET AND X-RAY OBSERVATIONS OF VV 114: FEEDBACK IN A LOCAL ANALOG TO LYMAN BREAK GALAXIES ②	310
<i>J. P. Grimes, T. Heckman, C. Hoopes, D. Strickland, A. Aloisi, G. Meurer, & A. Ptak</i>	
A SPITZER SPACE TELESCOPE INFRARED SPECTROGRAPH SURVEY OF WARM MOLECULAR HYDROGEN IN ULTRALUMINOUS INFRARED GALAXIES	323
<i>S. J. U. Hydon, L. Armus, J. L. Hydon, B. T. Soifer, & H. W. W. Spoon</i>	
RESULTS OF SPARO 2003: MAPPING MAGNETIC FIELDS IN GIANT MOLECULAR CLOUDS	340
<i>H. Li, G. S. Griffin, M. Krejny, G. Novak, R. F. Loewenstein, M. G. Newcomb, P. G. Calisse, & D. T. Chuss</i>	
MID-INFRARED HIGH SPATIAL RESOLUTION OBSERVATIONS OF NGC 1569: DETECTION OF EMBEDDED EMBRYOS OF STAR FORMATION	355
<i>D. Takura, T. Onaka, H. Takahashi, T. Miyata, S. Sako, M. Honda, Y. Okada, I. Sakon, Y. Y. Tajiri, H. Kataza, Y. K. Okamoto, T. Yamashita, & T. Fujiyoshi</i>	
THE ARAUCARIA PROJECT: A WIDE-FIELD PHOTOMETRIC SURVEY FOR CEPHEID VARIABLES IN NGC 3109 ②	366
<i>Grzegorz Pietrzyński, Wolfgang Gieren, Andrzej Udalski, Igor Soszyński, Fabio Bresolin, Rolf-Peter Kudritzki, Ronald Mennickent, Marcin Kubiak, Micha Szymański, & Sebastian Hidalgo</i>	
THE ARAUCARIA PROJECT: DISTANCE TO THE LOCAL GROUP GALAXY NGC 3109 FROM NEAR-INFRARED PHOTOMETRY OF CEPHEIDS ②	375
<i>I. Soszyński, W. Gieren, G. Pietrzyński, F. Bresolin, R.-P. Kudritzki, & J. Storm</i>	
EXTREMELY α -ENRICHED GLOBULAR CLUSTERS IN EARLY-TYPE GALAXIES: A STEP TOWARD THE DAWN OF STELLAR POPULATIONS? ②	383
<i>Thomas H. Puzia, Markus Kissler-Patig, & Paul Goudfrootj</i>	
THE METAL-POOR HALO OF THE ANDROMEDA SPIRAL GALAXY (M31) ②	389
<i>Jason Jot S. Kalirai, Karoline M. Gilbert, Puragra Guhathakurta, Steven R. Majewski, James C. Osthheimer, R. Michael Rich, Michael C. Cooper, David B. Reitzel, & Richard J. Patterson</i>	
CLOCKWISE STELLAR DISK AND THE DARK MASS IN THE GALACTIC CENTER	405
<i>Andrei M. Beloborodov, Yuri Levin, Frank Eisenhauer, Reinhard Genzel, Thibaut Paumard, Stefan Gillessen, & Thomas Ott</i>	
DETECTION RATE ESTIMATES OF GRAVITY WAVES EMITTED DURING PARABOLIC ENCOUNTERS OF STELLAR BLACK HOLES IN GLOBULAR CLUSTERS	411
<i>Bence Kocsis, Merse Eld Gáspár, & Szabolcs Márka</i>	
THREE-DIMENSIONAL PHOTOIONIZATION STRUCTURE AND DISTANCES OF PLANETARY NEBULAE. III. NGC 6781	430
<i>Hugo E. Schwarz & Hektor Monteiro</i>	
DUST DESTRUCTION IN THE HIGH-VELOCITY SHOCKS DRIVEN BY SUPERNOVAE IN THE EARLY UNIVERSE ②	435
<i>Takaya Nozawa, Takashi Kozasa, & Asao Habe</i>	
THE X-RAY HALO OF GX 5-1	452
<i>Randall K. Smith, T. M. Dame, Elisa Costantini, & Peter Predehl</i>	
THE EXCITATION OF N_2H^+ IN INTERSTELLAR MOLECULAR CLOUDS. I. MODELS ②	461
<i>F. Daniel, J. Cernicharo, & M.-L. Dubernet</i>	
FU ORIONIS: THE MIDI VLT PERSPECTIVE ②	472
<i>S. P. Quanz, Th. Henning, J. Bouwman, Th. Ratzka, & Ch. Leinert</i>	
WHY DO T TAURI DISKS ACCRETE?	484
<i>Lee Hartmann, Paola D'Alessio, Nuria Calvet, & James Muzerolle</i>	

CONTENTS

v

	Page
THE SPITZER c2d SURVEY OF NEARBY DENSE CORES. III. LOW-MASS STAR FORMATION IN A SMALL GROUP, L1251B <i>Jeong-Eun Lee, James Di Francesco, Shih-Ping Lai, Tyler L. Bourke, Neal J. Evans II, Bill Spiesman, Philip C. Myers, Lori E. Allen, Timothy Y. Brooke, Alicia Porras, & Zahed Wahhaj</i>	491
MILLIMETER IMAGING OF THE HH 270 PROTOSTELLAR CORE AND OUTFLOW <i>Minho Choi & Ya-Wen Tang</i>	504
GENERAL RELATIVISTIC, NEUTRINO-ASSISTED MAGNETOHYDRODYNAMIC WINDS—THEORY AND APPLICATION TO GAMMA-RAY BURSTS. I. SCHWARZSCHILD GEOMETRY © <i>Amir Levinson</i>	510
NEW ANALYTICAL FORMULAE FOR SUPERCRITICAL ACCRETION FLOWS © <i>Ken-ya Watarai</i>	523
THE INFRARED COUNTERPART TO THE MAGNETAR 1RXS J170849.0–400910 <i>Martin Durant & Marten H. van Kerkwijk</i>	534
FUSE SPECTROSCOPY OF THE WHITE DWARF IN U GEMINORUM <i>Knox S. Long, Gabriel Brammer, & Cynthia S. Froning</i>	541
A SEARCH FOR KILOGAUSS MAGNETIC FIELDS IN WHITE DWARFS AND HOT SUBDWARF STARS <i>G. Vaynsin, S. Bagulo, S. Fabrika, A. Reisenegger, G. A. Wade, Inwoo Han, & D. Monin</i>	559
THE EFFECT OF POROSITY ON X-RAY EMISSION-LINE PROFILES FROM HOT-STAR WINDS © <i>Stanley P. Owocki & David H. Cohen</i>	565
ON THE SIMILARITY BETWEEN CLUSTER AND GALACTIC STELLAR INITIAL MASS FUNCTIONS <i>Bruce G. Elmegreen</i>	572
STELLAR ROTATION IN YOUNG CLUSTERS. I. EVOLUTION OF PROJECTED ROTATIONAL VELOCITY DISTRIBUTIONS © <i>W. Huang & D. R. Gies</i>	580
STELLAR ROTATION IN YOUNG CLUSTERS. II. EVOLUTION OF STELLAR ROTATION AND SURFACE HELIUM ABUNDANCE © <i>W. Huang & D. R. Gies</i>	591
DIFFERENTIAL ROTATION OF ϵ ERIDANI DETECTED BY MOST <i>Bryce Croll, Gordon A. H. Walker, Rainer Kuschnig, Jaymie M. Matthews, Jason F. Rowe, Andrew Walker, Slavek M. Rucinski, Artie P. Hatzes, William D. Cochran, Russell M. Robb, David B. Guenther, Anthony F. J. Moffat, Dimitar Sasselov, & Werner W. Weiss</i>	607
A SPITZER INFRARED SPECTROGRAPH SPECTRAL SEQUENCE OF M, L, AND T DWARFS <i>Michael C. Cushing, Thomas L. Roellig, Mark S. Marley, D. Saumon, S. K. Leggett, J. Davy Kirkpatrick, John C. Wilson, G. C. Sloan, Amy K. Mainzer, Jeff E. Van Cleve, & James R. Houck</i>	614
RADIO OBSERVATIONS OF A LARGE SAMPLE OF LATE M, L, AND T DWARFS: THE DISTRIBUTION OF MAGNETIC FIELD STRENGTHS <i>E. Berger</i>	629
FURTHER OBSERVATIONS AND ANALYSIS OF THE RAPIDLY PULSATING SUBDWARF B STAR EC 20117–4014 <i>S. K. Randall, G. Fontaine, S. Charpinet, A. E. Lynas-Gray, I. P. Lopes, S. J. O'Toole, & P. Brassard</i>	637
DUST DYNAMICS, SURFACE BRIGHTNESS PROFILES, AND THERMAL SPECTRA OF DEBRIS DISKS: THE CASE OF AU MICROSCOPII <i>Linda E. Strubbe & Eugene I. Chiang</i>	652
ATMOSPHERES OF PROTOPLANETARY CORES: CRITICAL MASS FOR NUCLEATED INSTABILITY <i>Roman R. Rafikov</i>	666
THE FIRST EXTRASOLAR PLANET DISCOVERED WITH A NEW-GENERATION HIGH-THROUGHPUT DOPPLER INSTRUMENT © <i>Jian Ge, Julian van Eyken, Suvrath Mahadevan, Curtis DeWitt, Stephen R. Kane, Roger Cohen, Andrew Vanden Heuvel, Scott W. Fleming, Pengcheng Guo, Gregory W. Henry, Donald P. Schneider, Lawrence W. Ramsey, Robert A. Wittenmyer, Michael Endl, William D. Cochran, Eric B. Ford, Eduardo L. Martin, Garik Israelian, Jeff Valenti, & David Montes</i>	683
CONSTRAINTS ON THE MASS OF A HABITABLE PLANET WITH WATER OF NEBULAR ORIGIN <i>Masahiro Ikoma & Hidenori Genda</i>	696
THE EQUATORIAL BACKGROUND SOLAR CORONA DURING SOLAR MINIMUM <i>R. Ramesh, H. S. Nataraj, C. Kathiravan, & Ch. V. Sastry</i>	707
A SPECTROSCOPIC OBSERVATION OF A MAGNETIC RECONNECTION SITE IN A SMALL FLARING EVENT <i>Hirohisa Hara, Yohei Nishino, Kiyoshi Ichimoto, & Jean-Pierre Delaboudinière</i>	712
INTERMITTENT CORONAL LOOP OSCILLATIONS BY RANDOM ENERGY RELEASES © <i>César A. Mendoza-Briceño & Robert Erdélyi</i>	722

	Page
CORONAL MAGNETIC FIELD TOPOLOGY OVER FILAMENT CHANNELS: IMPLICATION FOR CORONAL MASS EJECTION INITIATIONS Ⓢ	732
<i>Yan Li & Janet Luhmann</i>	
THE CONTRAST OF MAGNETIC FLUX CONCENTRATIONS AT NEAR-INFRARED AND VISIBLE WAVELENGTHS	741
<i>A. Tritschler & H. Uitenbroek</i>	
TEMPERATURE DEPENDENCE OF THE FORMATION OF HYDROGEN, OXYGEN, AND HYDROGEN PEROXIDE IN ELECTRON-IRRADIATED CRYSTALLINE WATER ICE	753
<i>Weijun Zheng, David Jewitt, & Ralf I. Kaiser</i>	
ON THE TRANSFER OF RESONANT-LINE RADIATION IN MESH SIMULATIONS	762
<i>Argyro Tasitsiomi</i>	
2006 SEPTEMBER 10, NUMBER 2	
IMPROVING FOREGROUND SUBTRACTION IN STATISTICAL OBSERVATIONS OF 21 cm EMISSION FROM THE EPOCH OF REIONIZATION	767
<i>Miguel F. Morales, Judd D. Bowman, & Jacqueline N. Hewitt</i>	
INTERGALACTIC PHOTON SPECTRA FROM THE FAR-IR TO THE UV LYMAN LIMIT FOR $0 < z < 6$ AND THE OPTICAL DEPTH OF THE UNIVERSE TO HIGH-ENERGY GAMMA RAYS	774
<i>F. W. Stecker, M. A. Malkan, & S. T. Scully</i>	
FOREGROUND SUBTRACTION OF COSMIC MICROWAVE BACKGROUND MAPS USING WI-FIT (WAVELET-BASED HIGH-RESOLUTION FITTING OF INTERNAL TEMPLATES)	784
<i>F. K. Hansen, A. J. Banday, H. K. Eriksen, K. M. Górski, & P. B. Lilje</i>	
ON THE GROWTH OF PERTURBATIONS AS A TEST OF DARK ENERGY AND GRAVITY	797
<i>Edmund Bertschinger</i>	
GROWING LIVE DISKS WITHIN COSMOLOGICALLY ASSEMBLING ASYMMETRIC HALOS: WASHING OUT THE HALO PROLATENESS Ⓢ	807
<i>Ingo Berentzen & Isaac Shlosman</i>	
MASSIVE AND RED OBJECTS PREDICTED BY A SEMIANALYTICAL MODEL OF GALAXY FORMATION	820
<i>X. Kang, Y. P. Jing, & J. Silk</i>	
MASSIVE ELLIPTICAL GALAXIES: FROM CORES TO HALOS	826
<i>C. J. Lintott, I. Ferreras, & O. Lahav</i>	
ULTRAVIOLET RADIATIVE FEEDBACK ON HIGH-REDSHIFT PROTOGALAXIES Ⓢ	835
<i>Andrei Mesinger, Greg L. Bryan, & Zoltán Haiman</i>	
CHALLENGES FOR PRECISION COSMOLOGY WITH X-RAY AND SUNYAEV-ZELDOVICH EFFECT GAS MASS MEASUREMENTS OF GALAXY CLUSTERS	852
<i>Eric J. Hallman, Patrick M. Mott, Jack O. Burns, & Michael L. Norman</i>	
RATES AND PROPERTIES OF TYPE Ia SUPERNOVAE AS A FUNCTION OF MASS AND STAR FORMATION IN THEIR HOST GALAXIES Ⓢ	868
<i>M. Sullivan, D. Le Borgne, C. J. Pritchet, A. Hodsmann, J. D. Neill, D. A. Howell, R. G. Carlberg, P. Astier, E. Aubourg, D. Balam, S. Basa, A. Conley, S. Fabbro, D. Fouchez, J. Guy, I. Hook, R. Pain, N. Palanque-Delabrouille, K. Perrett, N. Regnault, J. Rich, R. Taulet, S. Baumont, J. Brondar, R. S. Ellis, M. Filiol, V. Lusset, S. Perlmutter, P. Ripoche, & C. Tao</i>	
THE FIRST TYPE Ia SUPERNOVAE: AN EMPIRICAL APPROACH TO TAMING EVOLUTIONARY EFFECTS IN DARK ENERGY SURVEYS FROM SNe Ia AT $z > 2$ Ⓢ	884
<i>Adam G. Riess & Mario Livio</i>	
DYNAMICAL CUSP REGENERATION	890
<i>David Merritt & Andras Szell</i>	
NEW CHANDRA OBSERVATIONS OF THE JET IN 3C 273. I. SOFTER X-RAY THAN RADIO SPECTRA AND THE X-RAY EMISSION MECHANISM	900
<i>Sebastian Jester, D. E. Harris, Herman L. Marshall, & Klaus Meisenheimer</i>	
SHEDDING NEW LIGHT ON THE 3C 273 JET WITH THE SPITZER SPACE TELESCOPE	910
<i>Yasunobu Uchiyama, C. Megan Urry, C. C. Cheung, Sebastian Jester, Jeffrey Van Deyne, Paolo Coppi, Rita M. Sambruna, Tadayuki Takahashi, Fabrizio Tavecchio, & Laura Maraschi</i>	
RELATIVISTIC IONIZATION FRONTS	922
<i>Paul R. Shapiro, Ilian T. Iliev, Marcelo A. Alvarez, & Evan Scannapieco</i>	
THE FORMATION AND EVOLUTION OF INTRACLUSTER LIGHT	936
<i>Craig S. Rudick, J. Christopher Mihos, & Cameron McBride</i>	
CHANDRA OBSERVATIONS OF NUCLEAR OUTFLOWS IN THE ELLIPTICAL GALAXY NGC 4552 IN THE VIRGO CLUSTER Ⓢ	947
<i>M. Machacek, P. E. J. Nulsen, C. Jones, & W. R. Forman</i>	

	Page
THE X-RAY LUMINOSITY–MASS RELATION FOR LOCAL CLUSTERS OF GALAXIES ② <i>R. Stanek, A. E. Evrard, H. Böhringer, P. Schuecker, & B. Nord</i>	956
ARE RED TIDAL FEATURES UNEQUIVOCAL SIGNATURES OF MAJOR DRY MERGERS? <i>Daisuke Kawata, John S. Mulchaey, Brad K. Gibson, & Patricia Sánchez-Blázquez</i>	969
MASS DEFICITS, STALLING RADII, AND THE MERGER HISTORIES OF ELLIPTICAL GALAXIES <i>David Merritt</i>	976
ULTRAVIOLET THROUGH FAR-INFRARED SPATIALLY RESOLVED ANALYSIS OF THE RECENT STAR FORMATION IN M81 (NGC 3031) ② <i>Pablo G. Pérez-González, Robert C. Kennicutt Jr., Karl D. Gordon, Karl A. Misselt, Armando Gil de Paz, Charles W. Engelbracht, George H. Rieke, George J. Bendo, Luciana Bianchi, Samuel Boissier, Daniela Calzetti, Daniel A. Dale, Bruce T. Draine, Thomas H. Jarrett, David Hollenbach, & Moire K. M. Prescott</i>	987
THE ARAUCARIA PROJECT: VLT SPECTRA OF BLUE SUPERGIANTS IN WLM— CLASSIFICATION AND FIRST ABUNDANCES <i>Fabio Bresolin, Grzegorz Pietrzyński, Miguel A. Urbaneja, Wolfgang Gieren, Rolf-Peter Kudritzki, & Kim A. Venn</i>	1007
A TESTABLE STOCHASTIC ACCELERATION MODEL FOR FLARES IN SAGITTARIUS A* <i>Sining Liu, Vahé Petrosian, Fulvio Melia, & Christopher L. Fryer</i>	1020
THE BLUE STRAGGLER POPULATION OF THE GLOBULAR CLUSTER M5: COMPARISON WITH M3 ② <i>Steven R. Warren, Eric L. Sandquist, & Michael Bolte</i>	1026
THE X-RAY STRUCTURE OF THE PULSAR BOW SHOCK G189.22+2.90 IN THE SUPERNOVA REMNANT IC 443 <i>B. M. Gaensler, S. Chatterjee, P. O. Slane, E. van der Swaluw, F. Camilo, & J. P. Hughes</i>	1037
MAGNETOHYDRODYNAMIC TURBULENT MIXING LAYERS: EQUILIBRIUM COOLING MODELS <i>Alcandro Esquivel, Robert A. Benjamin, Alex Lazarian, Jungyeon Cho, & Samuel N. Leitner</i>	1043
THE BIRTH OF MOLECULAR CLOUDS: FORMATION OF ATOMIC PRECURSORS IN COLLIDING FLOWS <i>Fabian Heitsch, Adrienne D. Slyz, Julien E. G. Devriendt, Lee W. Hartmann, & Andreas Burkert</i>	1052
HIGH-RESOLUTION X-RAY SPECTROSCOPY OF THE INTERSTELLAR MEDIUM. II. NEON AND IRON ABSORPTION EDGES <i>Adrienne M. Juett, Norbert S. Schulz, Deepto Chakrabarty, & Thomas W. Gorczyca</i>	1066
THE POSSIBLY REMNANT MASSIVE OUTFLOW IN G5.89-0.39. I. OBSERVATIONS AND INITIAL MAGNETOHYDRODYNAMIC SIMULATIONS <i>P. D. Klaassen, R. Plume, R. Ouyed, A. M. von Benda-Beckmann, & J. Di Francesco</i>	1079
KINEMATICS OF NGC 2264: SIGNS OF CLUSTER FORMATION ② <i>Gábor Fűrész, Lee W. Hartmann, Andrew H. Szentgyorgyi, Naomi A. Ridge, Luisa Rebull, John Stauffer, David W. Latham, Maureen A. Conroy, Daniel G. Fabricant, & John Roll</i>	1090
SPITZER IRS OBSERVATIONS OF FU ORIONIS OBJECTS ② <i>J. D. Green, L. Hartmann, N. Calvet, D. M. Watson, M. Ibrahimov, E. Furlan, B. Sargent, & W. J. Forrest</i>	1099
A STUDY OF COMPACT OBJECT MERGERS AS SHORT GAMMA-RAY BURST PROGENITORS <i>Krzysztof Belczynski, Rosalba Perna, Tomasz Bulik, Vassiliki Kalogera, Natalia Ivanova, & Donald Q. Lamb</i>	1110
GRB 050717: A LONG, SHORT-LAG, HIGH-PEAK ENERGY BURST OBSERVED BY SWIFT AND KONUS <i>H. A. Krimm, C. Hurkett, V. Pal'shin, J. P. Norris, B. Zhang, S. D. Barthelmy, D. N. Burrows, N. Gehrels, S. Golenetskii, J. P. Osborne, A. M. Parsons, M. Perri, & R. Willingale</i>	1117
HIGH-QUALITY EARLY-TIME LIGHT CURVES OF GRB 060206: IMPLICATIONS FOR GAMMA-RAY BURST ENVIRONMENTS AND ENERGETICS <i>A. Monfardini, S. Kobayashi, C. Guidorzi, D. Carter, C. G. Mundell, D. F. Bersier, A. Gomboc, A. Melandri, C. J. Mottram, R. J. Smith, & I. A. Steele</i>	1125
THE FIRST SWIFT X-RAY FLASH: THE FAINT AFTERGLOW OF XRF 050215B ② <i>A. J. Levan, J. P. Osborne, N. R. Tanvir, K. L. Page, E. Rol, B. Zhang, M. R. Goad, P. T. O'Brien, R. S. Priddey, D. Bersier, D. N. Burrows, R. Chapman, A. S. Fruchter, P. Giommi, N. Gehrels, M. A. Hughes, S. Pak, C. Simpson, G. Tagliaferri, & E. Vardoulaki</i>	1132
DETAILED ATMOSPHERE MODELING FOR THE NEUTRON STAR 1E1207.4–5209: EVIDENCE OF OXYGEN/NEON ATMOSPHERE ② <i>Kaya Mori & Charles J. Hailey</i>	1139
MULTIWAVELENGTH OBSERVATIONS OF EXO 0748–676. I. REPROCESSING OF X-RAY BURSTS <i>R. I. Hynes, Keith Horne, K. O'Brien, C. A. Haswell, E. L. Robinson, A. R. King, P. A. Charles, & K. J. Pearson</i>	1156
MULTIWAVELENGTH OBSERVATIONS OF EXO 0748–676. II. EMISSION-LINE BEHAVIOR ② <i>K. J. Pearson, R. I. Hynes, D. Steeghs, P. G. Jonker, C. A. Haswell, A. R. King, K. O'Brien, G. Nelemans, & M. Méndez</i>	1169
ATMOSPHERIC CHEMISTRY IN GIANT PLANETS, BROWN DWARFS, AND LOW-MASS DWARF STARS. II. SULFUR AND PHOSPHORUS <i>Channon Visscher, Katharina Lodders, & Bruce Fegley Jr.</i>	1181
THE POTENTIAL FOR TIDALLY HEATED ICY AND TEMPERATE MOONS AROUND EXOPLANETS ② <i>Caleb A. Scharf</i>	1196

ACCRETION DISKS AROUND YOUNG STARS: LIFETIMES, DISK LOCKING, AND VARIABILITY <i>Ray Jayawardhana, Jaime Coffey, Alexander Scholz, Alexis Brandeker, & Marten H. van Kerkwijk</i>	1206
EOLIAN EROSION OF DUSTY BODIES IN PROTOPLANETARY DISKS <i>Georgi B. Paraskov, Gerhard Wurm, & Oliver Krauss</i>	1219
A TRANSITING PLANET OF A SUN-LIKE STAR © <i>P. R. McCullough, J. E. Stys, Jeff A. Valenti, C. M. Johns-Krull, K. A. Janes, J. N. Heasley, B. A. Bye, C. Dodd, S. W. Fleming, A. Pinnick, R. Bissinger, B. L. Gary, P. J. Howell, & T. Vanmunster</i>	1228
HARD X-RAY SPECTRAL OBSERVATION OF A HIGH-TEMPERATURE THERMAL FLARE <i>Ken Kobayashi, Saku Tsuneta, Tomonori Tamura, Kazuyoshi Kumagai, Yukio Katsukawa, Masahito Kubo, Yasushi Sakamoto, Naoki Kohara, Takamasa Yamagami, & Yoshitaka Saito</i>	1239
SOLAR SOURCE REGIONS FOR ^3He -RICH SOLAR ENERGETIC PARTICLE EVENTS IDENTIFIED USING IMAGING RADIO, OPTICAL, AND ENERGETIC PARTICLE OBSERVATIONS <i>M. Pick, G. M. Mason, Y.-M. Wang, C. Tan, & L. Wang</i>	1247
LINE SHAPE CHANGES AND DOPPLER MEASUREMENTS IN SOLAR ACTIVE REGIONS. I. A METHOD FOR CORRECTING DOPPLERGRAMS FROM SOHO MDI <i>R. Wachter, J. Schou, & K. Sankarasubramanian</i>	1256
COMPUTATIONAL ACOUSTICS IN SPHERICAL GEOMETRY: STEPS TOWARD VALIDATING HELIOSEISMOLOGY © <i>S. M. Hanasoge, R. M. Larsen, T. L. Duvall Jr., M. L. DeRosa, N. E. Hurlburt, J. Schou, M. Roth, J. Christensen-Dalsgaard, & S. K. Lele</i>	1268
CALIBRATING AN INTERFEROMETRIC NULL <i>Benjamin F. Lane, Matthew W. Muterspaugh, & Michael Shao</i>	1276
THEORETICAL MODELING OF FORMIC ACID (HCOOH), FORMATE (HCOO^-), AND AMMONIUM (NH_4^+) VIBRATIONAL SPECTRA IN ASTROPHYSICAL ICES © <i>Jin-Young Park & David E. Woon</i>	1285
ERRATUM: "DISSIPATION OF THE PERPENDICULAR TURBULENT CASCADE IN THE SOLAR WIND" (ApJ, 639, 1177 [2006]) <i>S. A. Markovskii, Bernard J. Vasquez, Charles W. Smith, & Joseph V. Hollweg</i>	1291

THE ASTROPHYSICAL JOURNAL LETTERS

CONTENTS OF VOLUME 648, PART 2

2006 SEPTEMBER 1, NUMBER 1

	Page
RECOGNIZING THE FIRST RADIATION SOURCES THROUGH THEIR 21 cm SIGNATURE <i>Leonid Chuzhoy, Marcelo A. Alvarez, and Paul R. Shapiro</i>	L1
CLUSTERING OF i_{775} DROPOUT GALAXIES AT $z \sim 6$ IN GOODS AND THE UDF <i>Roderik A. Overzier, Rychard J. Bouwens, Garth D. Illingworth, and Marijn Franx</i>	L5
THE FAINT AFTERGLOW AND HOST GALAXY OF THE SHORT-HARD GRB 060121 <i>A. J. Levan, N. R. Tanvir, A. S. Fruchter, E. Rol, J. P. U. Fynbo, J. Hjorth, G. Williams, E. Bergeron, D. Bersier, M. Bremer, T. Grav, P. Jakobsson, K. Nilsson, E. Olszewski, R. S. Priddey, D. Rafferty, and J. Rhoads</i>	L9
ON THE FUELING OF MASSIVE BLACK HOLES AND THE PROPERTIES OF THEIR HOST SPHEROIDS <i>Andrés Escala</i>	L13
LOOKING AT THE FUNDAMENTAL PLANE THROUGH A GRAVITATIONAL LENS <i>G. Bertin and M. Lombardi</i>	L17
A SIMPLE MODEL FOR THE SIZE EVOLUTION OF ELLIPTICAL GALAXIES <i>Sadegh Khochfar and Joseph Silk</i>	L21
SUBARCSECOND RESOLUTION MID-INFRARED OBSERVATIONS OF SUPER STAR CLUSTERS IN THE ANTENNAE (NGC 4038/4039) <i>L. Snijders, P. P. van der Werf, B. R. Brandl, S. Mengel, D. Schaerer, and Z. Wang</i>	L25
INVERSE COMPTON EMISSION FROM GALACTIC SUPERNOVA REMNANTS: EFFECT OF THE INTERSTELLAR RADIATION FIELD \textcircled{E} <i>Troy A. Porter, Igor V. Moskalenko, and Andrew W. Strong</i>	L29
THE X-RAY SYNCHROTRON EMISSION OF RCW 86 AND THE IMPLICATIONS FOR ITS AGE <i>Jacco Vink, Johan Bleeker, Kurt van der Heyden, Andrei Bykov, Aya Bamba, and Ryo Yamazaki</i>	L33
DETECTION OF A FAR-INFRARED BOW SHOCK NEBULA AROUND R HYA: THE FIRST MIRIAD RESULTS <i>T. Ueta, A. K. Speck, R. E. Stencel, F. Herwig, R. D. Gehrz, R. Szczerba, H. Izumiura, A. A. Zijlstra, W. B. Latter, M. Matsuura, M. Meixner, M. Steffen, and M. Elitzur</i>	L39
V1647 ORIONIS: THE X-RAY EVOLUTION OF A PRE-MAIN-SEQUENCE ACCRETION BURST \textcircled{E} <i>Joel H. Kastner, Michael Richmond, Nicolas Grosso, David A. Weintraub, Theodore Simon, Arne Henden, Kenji Hamaguchi, Adam Frank, and Hideki Ozawa</i>	L43
PRINCIPLE OF UNIVERSALITY OF γ -PROCESS NUCLEOSYNTHESIS IN CORE-COLLAPSE SUPERNOVA EXPLOSIONS <i>Takehito Hayakawa, Nobuyuki Iwamoto, Toshitaka Kajino, Toshiyuki Shizuma, Hideyuki Umeda, and Ken'ichi Nomoto</i>	L47
TIME-DEPENDENT FORCE-FREE PULSAR MAGNETOSPHERES: AXISYMMETRIC AND OBLIQUE ROTATORS <i>Anatoly Spitkovsky</i>	L51
X-RAYS FROM RADIO MILLISECOND PULSARS: COMPTONIZED THERMAL RADIATION <i>Slavko Bogdanov, Jonathan E. Grindlay, and George B. Rybicki</i>	L55
INTRINSIC PROPERTIES OF THE MAGNETICALLY COLLIMATED H ₂ O MASER JET OF W43A <i>W. H. T. Vlemmings and P. J. Diamond</i>	L59
ANISOTROPIC BEAMS OF ENERGETIC PARTICLES UPSTREAM FROM THE TERMINATION SHOCK OF THE SOLAR WIND <i>G. Gloeckler and L. A. Fisk</i>	L63
HIGH-RESOLUTION OBSERVATIONS OF FAST EVENTS IN THE SOLAR CHROMOSPHERE \textcircled{E} <i>M. J. van Noort and L. H. M. Rouppe van der Voort</i>	L67
MAGNETIC HELICITY DENSITY AND ITS FLUX IN WEAKLY INHOMOGENEOUS TURBULENCE <i>Kandaswamy Subramanian and Axel Brandenburg</i>	L71
TIME-DISTANCE MEASUREMENTS OF CROSS-CORRELATION ASYMMETRIES AROUND NOAA AR 10486 <i>Jesper M. Jensen, Frank P. Pijpers, and Michael J. Thompson</i>	L75
OBSERVATION OF OD ⁺ USING MICROWAVE SPECTROSCOPY: A NEW CANDIDATE FOR ASTROPHYSICAL DETECTION? <i>Gabriele Cazzoli and Cristina Pizzarini</i>	L79
INSTRUCTIONS TO AUTHORS OF LETTERS, AND ADDITIONAL USEFUL INFORMATION	Inside Back Cover
INSTRUCTIONS FOR ELECTRONIC MANUSCRIPT SUBMISSION	Back Cover

2006 SEPTEMBER 10, NUMBER 2

	Page
GRB 060121: IMPLICATIONS OF A SHORT-/INTERMEDIATE-DURATION γ -RAY BURST AT HIGH REDSHIFT $\text{\textcircled{E}}$	L83
<i>A. de Ugarte Postigo, A. J. Castro-Tirado, S. Guziy, J. Gorosabel, G. Jóhannesson, M. A. Aloy, S. McBreen, D. Q. Lamb, N. Benítez, M. Jelińek, S. B. Pandey, D. Coe, M. D. Pérez-Ramírez, F. J. Aceituno, M. Alises, J. A. Acosta-Pulido, G. Gómez, R. López, T. Q. Donaghy, Y. E. Nakagawa, T. Sakamoto, G. R. Ricker, F. R. Hearty, M. Bayliss, G. Gyuk, and D. G. York</i>	
TEMPORAL VARIATION IN THE ABUNDANCE OF EXCITED Fe^+ NEAR A GAMMA-RAY BURST AFTERGLOW $\text{\textcircled{E}}$	L89
<i>Miroslava Dessauges-Zavadsky, Hsiao-Wen Chen, Jason X. Prochaska, Joshua S. Bloom, and Aaron J. Barth</i>	
ON THE INCIDENCE OF STRONG Mg II ABSORBERS ALONG GAMMA-RAY BURST SIGHT LINES $\text{\textcircled{E}}$	L93
<i>Gabriel E. Prochter, Jason X. Prochaska, Hsiao-Wen Chen, Joshua S. Bloom, Miroslava Dessauges-Zavadsky, Ryan J. Foley, Sebastian Lopez, Max Petteni, Andrea K. Dupree, and P. Guhathakurta</i>	
SUPERSOLAR SUPER-LYMAN LIMIT SYSTEMS $\text{\textcircled{E}}$	L97
<i>Jason X. Prochaska, John M. O'Meara, Stéphane Herbert-Fort, Scott Burles, Gabriel E. Prochter, and Rebecca A. Bernstein</i>	
THE AGN-OBSCURING TORUS: THE END OF THE "DOUGHNUT" PARADIGM?	L101
<i>Moshe Elitzur and Isaac Shlosman</i>	
DISCOVERY OF VERY HIGH ENERGY γ -RAYS FROM MARKARIAN 180 TRIGGERED BY AN OPTICAL OUTBURST	L105
<i>J. Albert, E. Aliu, H. Anderhub, P. Antoranz, A. Armada, M. Asensio, C. Baixeras, J. A. Barrio, H. Bartko, D. Bastieri, J. Becker, W. Bednarek, K. Berger, C. Bigongiari, A. Biland, E. Bisesi, R. K. Bock, P. Bordas, V. Bosch-Ramon, T. Bretz, I. Britvitch, M. Camara, E. Carmona, A. Chilingarian, S. Ciprini, J. A. Coarasa, S. Commichau, J. L. Contreras, J. Cortina, V. Curtef, V. Danielyan, F. Dazzi, A. De Angelis, R. de los Reyes, B. De Lotto, E. Domingo-Santamaría, D. Dorner, M. Doro, M. Errando, M. Fagiolini, D. Ferenc, E. Fernández, R. Firpo, J. Flix, M. V. Fonseca, L. Font, M. Fuchs, N. Galante, M. Garzarczyk, M. Gaug, M. Giller, F. Goebel, D. Hakobyan, M. Hayashida, T. Hengstebeck, D. Höhne, J. Hose, C. C. Hsu, P. Jacon, O. Kalekin, R. Kosyra, D. Kranich, M. Laatiaoui, A. Laille, T. Lenisa, P. Liebing, E. Lindfors, S. Lombardi, F. Longo, J. López, M. López, E. Lorenz, P. Majumdar, G. Maneva, K. Mannheim, O. Mansutti, M. Mariotti, M. Martínez, D. Mazin, C. Merck, M. Meucci, M. Meyer, J. M. Miranda, R. Mirzoyan, S. Mizobuchi, A. Moralejo, K. Nilsson, J. Ninkovic, E. Oña-Wilhelmi, R. Orduña, N. Otte, I. Oya, D. Paneque, R. Paoletti, J. M. Paredes, M. Pasanen, D. Pascoli, F. Pauss, R. Pegna, M. Persic, L. Perazzo, A. Piccioli, M. Poller, E. Prandini, A. Raymers, W. Rhode, M. Ribó, J. Rico, B. Riegel, M. Rissi, A. Robert, S. Rügemer, A. Saggion, A. Sánchez, P. Sartori, V. Scalzotto, V. Scapin, R. Schmitt, T. Schweizer, M. Shayduk, K. Shinozaki, S. N. Shore, N. Sidro, A. Sillanpää, D. Sobczynska, A. Stamerra, L. S. Stark, L. Takalo, P. Temnikov, D. Tesaro, M. Teshima, N. Tonello, A. Torres, D. F. Torres, N. Turini, H. Vankov, V. Vitale, R. M. Wagner, T. Wibig, W. Wittek, R. Zanin, and J. Zapatero</i>	
A DIRECT EMPIRICAL PROOF OF THE EXISTENCE OF DARK MATTER	L109
<i>Douglas Clowe, Maruša Bradač, Anthony H. Gonzalez, Maxim Markevitch, Scott W. Randall, Christine Jones, and Dennis Zaritsky</i>	
CGCG 480-022: A DISTANT LONESOME MERGER?	L115
<i>C. Carretero, A. Vazdekis, A. C. González-García, J. E. Beckman, and V. Quilis</i>	
X-RAY OBSERVATIONS OF TYPE Ia SUPERNOVAE WITH SWIFT: EVIDENCE OF CIRCUMSTELLAR INTERACTION FOR SN 2005ke $\text{\textcircled{E}}$	L119
<i>S. Immler, P. J. Brown, P. Milne, L.-S. The, R. Petre, N. Gehrels, D. N. Burrows, J. A. Nousek, C. L. Williams, E. Pian, P. A. Mazzali, K. Nomoto, R. A. Chevalier, V. Mangano, S. T. Holland, P. W. A. Røming, J. Greiner, and D. Pooley</i>	
ON THE PHYSICS OF TYPE I X-RAY BURSTS ON ACCRETING NEUTRON STARS AT HIGH ACCRETION RATES	L123
<i>Randall L. Cooper and Ramesh Narayan</i>	
THE INTRINSIC SIZE OF SAGITTARIUS A* FROM 0.35 TO 6 cm	L127
<i>Geoffrey C. Bower, W. M. Goss, Heino Falcke, Donald C. Backer, and Yoram Lithwick</i>	
DYNAMICAL EXPANSION OF IONIZATION AND DISSOCIATION FRONT AROUND A MASSIVE STAR: A STARBURST MECHANISM	L131
<i>Takashi Hosokawa and Shu-ichiro Inutsuka</i>	
MID-INFRARED EMISSION FROM DUST AROUND QUIESCENT LOW-MASS X-RAY BINARIES	L135
<i>Michael P. Muno and Jon Mauerhan</i>	
CYCLOTRON RESONANCE ENERGIES AT A LOW X-RAY LUMINOSITY: A0535+262 OBSERVED WITH SUZAKU	L139
<i>Y. Terada, T. Mihara, M. Nakajima, M. Suzuki, N. Isobe, K. Makishima, H. Takahashi, T. Enoto, M. Kokubun, T. Kitaguchi, S. Naik, T. Dotani, F. Nagase, T. Tanaka, S. Watanabe, S. Kitamoto, K. Sudoh, A. Yoshida, Y. Nakagawa, S. Sugita, T. Kohmura, T. Kotani, D. Yonetoku, L. Angelini, J. Cottam, K. Mukai, R. Kelley, Y. Soong, M. Bautz, S. Kissel, and J. Doty</i>	
THE DISCOVERY OF FLUORINE IN COOL EXTREME HELIUM STARS	L143
<i>Gajendra Pandey</i>	
THE 10 μm INFRARED BAND OF SILICATE DUST: A LABORATORY STUDY COMPARING THE AEROSOL AND KBr PELLET TECHNIQUES	L147
<i>A. Tamai, H. Mutschke, J. Blum, and G. Meeus</i>	

CONTENTS

v

MAGNETOACOUSTIC PORTALS AND THE BASAL HEATING OF THE SOLAR CHROMOSPHERE <i>Stuart M. Jefferies, Scott W. McIntosh, James D. Armstrong, Thomas J. Bogdan, Alessandro Cacciani, and Bernhard Fleck</i>	L151
DYNAMO ACTION IN THE SOLAR CONVECTION ZONE AND TACHOCLINE: PUMPING AND ORGANIZATION OF TOROIDAL FIELDS <i>Matthew K. Browning, Mark S. Miesch, Allan Sacha Brun, and Juri Toomre</i>	L157
ERRATUM: "A COMPTONIZATION MODEL FOR THE PROMPT OPTICAL AND INFRARED EMISSION OF GRB 041219A" (ApJ, 646, L25 [2006]) <i>Zheng Zheng, Ye Lu, and Yong-Heng Zhao</i>	L161
INSTRUCTIONS TO AUTHORS OF LETTERS, AND ADDITIONAL USEFUL INFORMATION	<i>Inside Back Cover</i>
INSTRUCTIONS FOR ELECTRONIC MANUSCRIPT SUBMISSION	<i>Back Cover</i>



